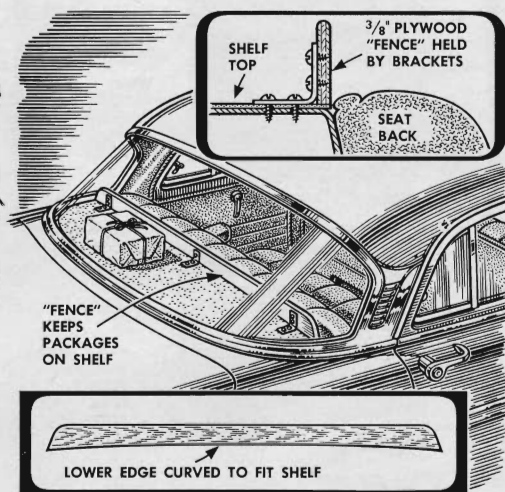




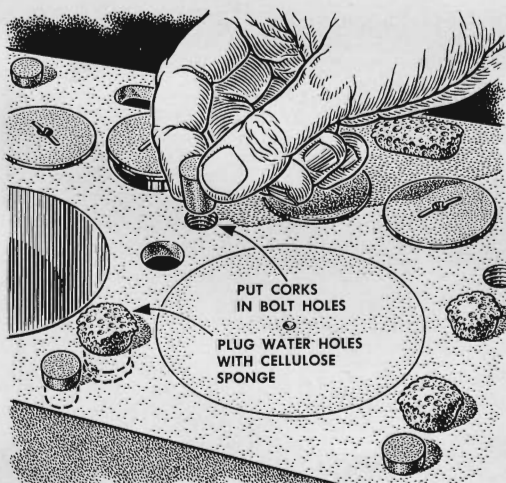
Hints from the Model Garage



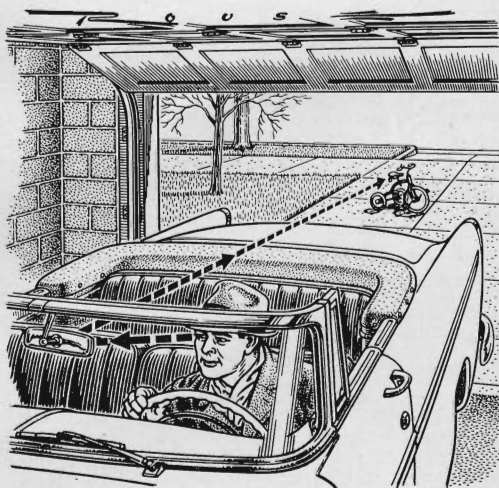
Creeping seat covers can be held in place by tucking a length of rubber hose between the seat cushion and the back rest. Smooth out the wrinkles as you force the hose down. Plastic hose won't work as well; it's too smooth.



Add a low fence to the shelf behind a car's rear seat to keep packages from sliding forward during quick stops. Cut the fence from $\frac{3}{8}$ " plywood and paint or upholster it to match the car's interior. Fasten it in place with small angles.

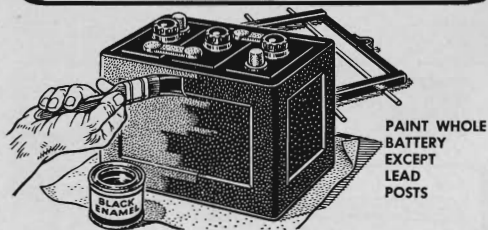
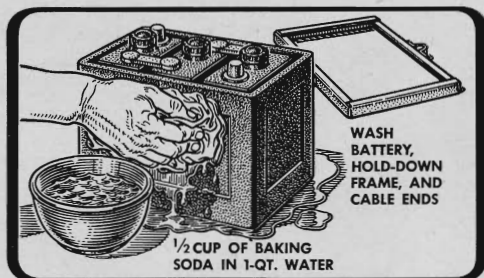


When working on an engine block with the cylinder head removed, plug the blind stud holes and water passages with corks or pieces of cellulose sponge to keep them free of carbon scrapings, valve-grinding compound and other loose dirt.

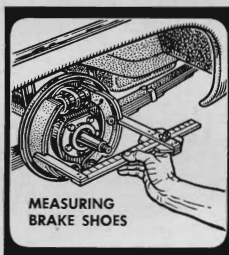
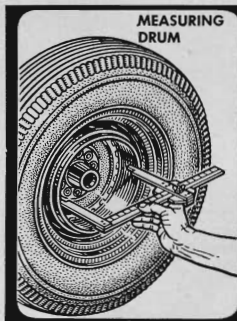
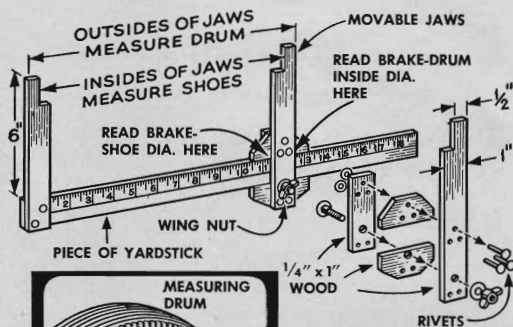


Take a good look through the rear-view mirror *before* you back down a driveway. If you start moving before you look, the rear deck may chop your rearward line of vision as you back out, so that it hides some object on the driveway.

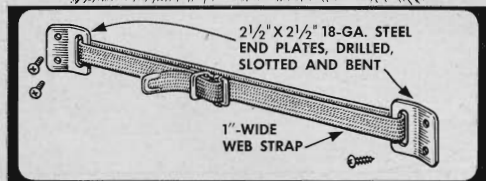
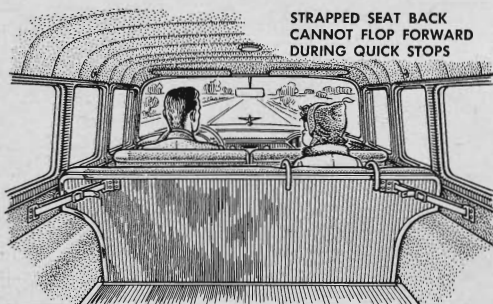
More Hints from the Model Garage



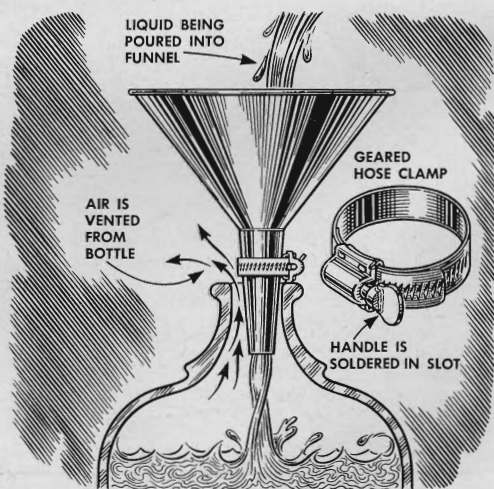
Stop tiny current leaks that steal power from your battery. Take it out of the car and wash off the current-conducting dirt with baking soda and water. When dry, paint the battery case, cell tops and hold-down bracket. Scrape the terminals and cable lugs clean for good contact and coat them with petroleum jelly.



Brake jobs can be speeded with a rough caliper built around a yardstick. By pre-adjusting the brake shoes to slightly less than the drum diameter, only a notch or two of adjustment is needed to complete the job after the drum is installed. Cut two jaws from $\frac{1}{4}$ " wood or hardboard, fasten one and fit guides to the other.



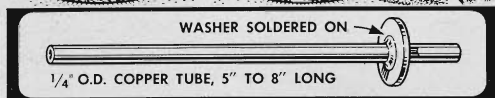
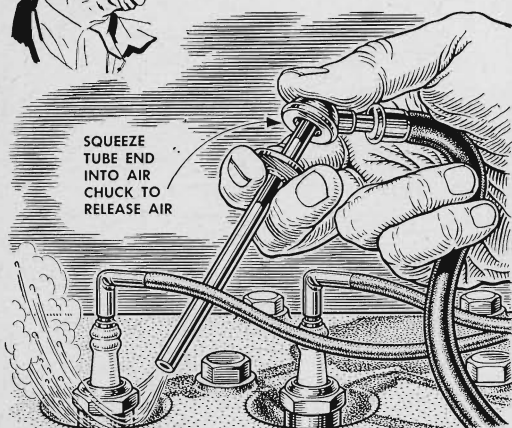
A pair of web straps will keep the weight of a baby's car seat from tipping a station-wagon seat forward if you have to stop suddenly. Screw slotted brackets to the side of the wagon and the back of the seat; loop the straps through them.



When pouring liquids through a funnel, air will vent easier if a hose clamp is locked around the funnel's neck to hold it part way out of the mouth of the container. Move the clamp up or down to provide a $\frac{1}{8}$ " space for venting.



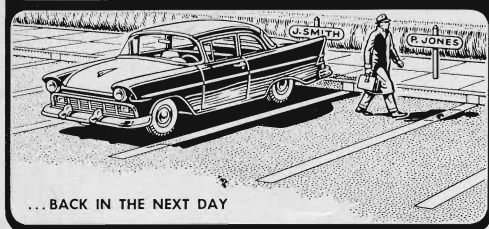
Hints from the Model Garage



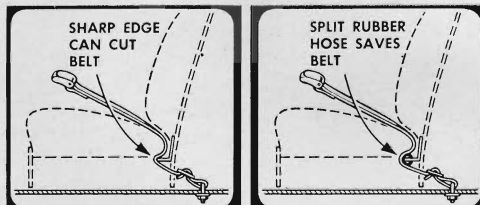
Use this blow gun to get dirt out of spark-plug recesses or to clean parts. It's inserted into a filling-station air-hose chuck, and, when pressed in, directs the blast of air where needed. A washer soldered to the tube serves as a trigger.



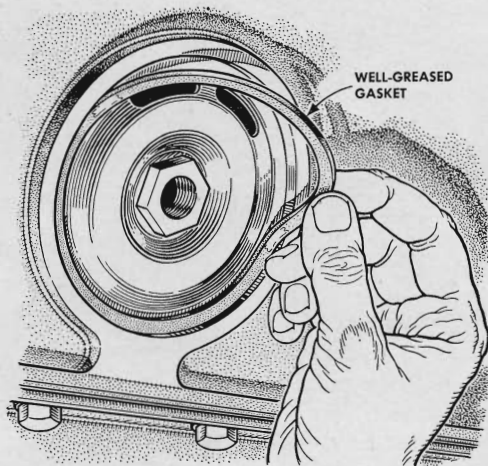
Stick reflective tape on the inside of a gas-cap cover that swings out. If you get stalled on the road at night, open the cover to warn cars approaching from the rear. If your cover doesn't open outward, stick tape on the edge of a door.



Keep the sun from fading one side of your car more than the other when you park in the same spot every day. By *backing* into the space every other day, you can equalize the fading, as both sides will receive the same exposure.



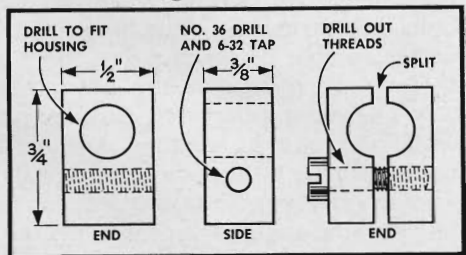
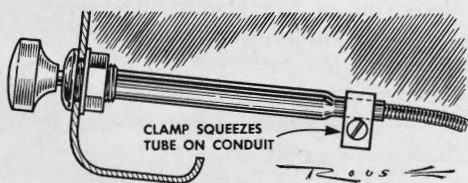
Protect safety belts from chafing on the sharp edge of a metal seat frame, or they may cut through under strain. Slit short lengths of heater hose and force them over the metal edge where the belts come through the seat.



Stick gaskets in place by applying a coat of clean grease to the side that joins the part being installed. The grease makes the gasket adhere, but does not affect the seal. This trick is especially good in places that are hard to reach.



An iron-on patch makes a neat repair over frayed upholstery. If the color can't be matched, cut a large patch from a harmonizing color to make a two-tone design. Back up the patch by stuffing crumpled newspaper into the spot.



A flexible cable that's pulled loose because of too much yanking can be repaired with a clamp made from a block of steel. Machine as shown and tighten it around the housing neck to squeeze the metal tight on the flexible section.

Do You Have an Auto Hint? Send It in and Win a Prize

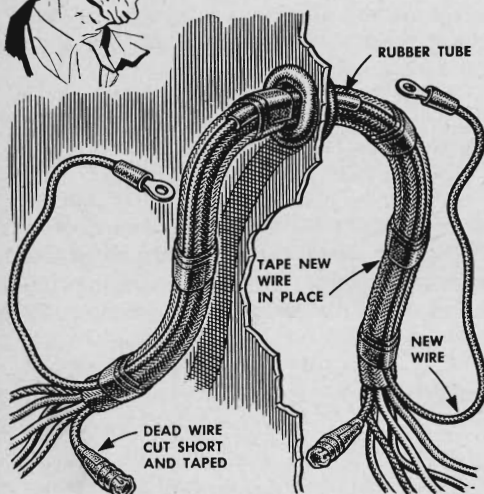
HAVE you discovered or developed a money-saving short cut for making your own auto repairs? Have you found an easier way to do a difficult job? Got a tip that will make driving safer or easier? Or do you know someone who has?

POPULAR SCIENCE will pay a cash prize of \$15 for every auto-repair hint accepted for publication each month in Hints from the Model Garage.

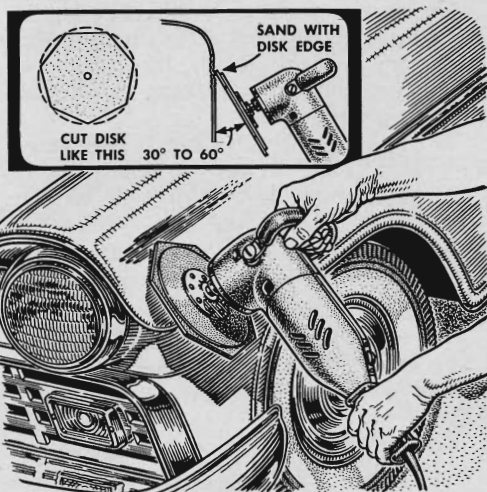
Describe your hint as completely as you can in words. Add a pencil drawing, or shoot a photo, if you feel that this will make it more easily understood. Address your entry to Model Garage Editor, POPULAR SCIENCE MONTHLY, 353 Fourth Ave., New York 10, N. Y.



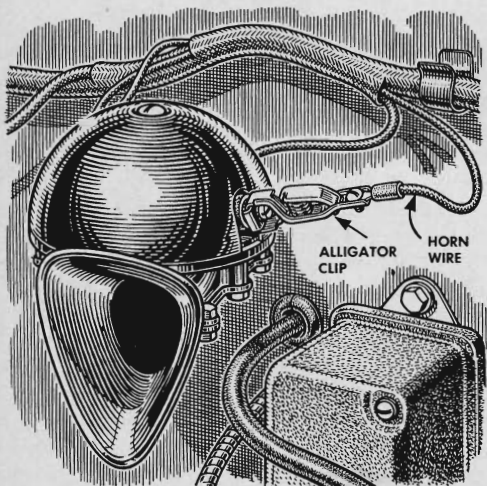
Hints from the Model Garage



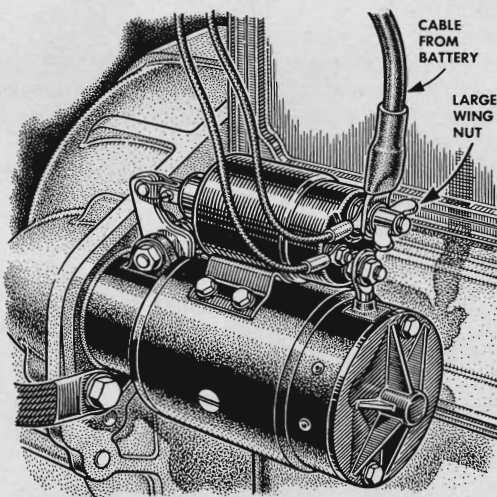
To replace a bad wire in a harness, cut both ends out of service and tape them over. Install a new wire of the same gauge by running it along the outside of the harness and taping it in place at intervals. Use rubber tubing at chafe spots.



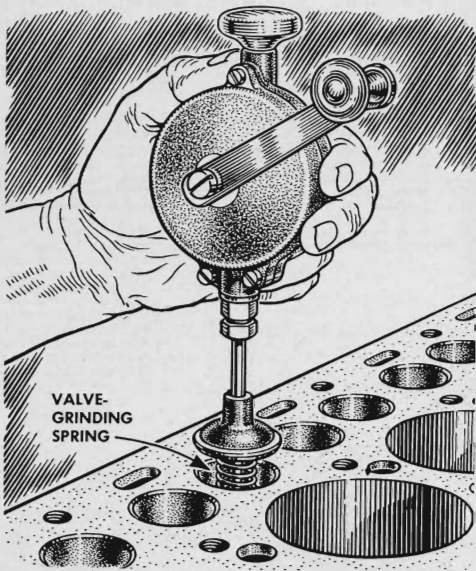
Reach into the deep spots when you clean metal for filling with lead. Worn abrasive disks, cut into polygonal shapes, will flex themselves into the recesses. Bring the tips of the spinning disk into light contact with the metal surface.



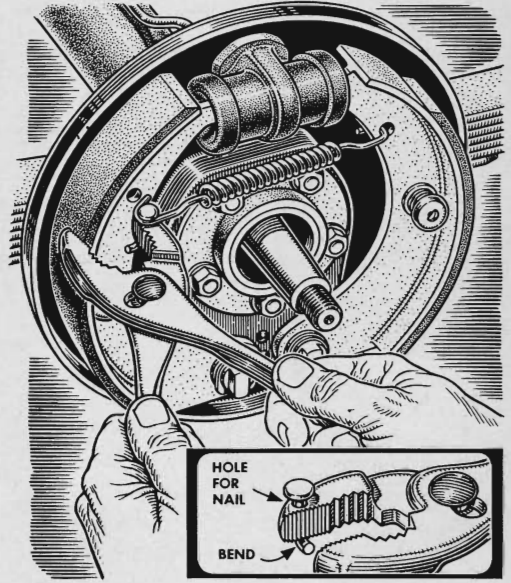
Disconnecting electrical wires fast is sometimes necessary. By having the foresight to install alligator clips on horn wires (above, left), you can yank them off immediately if the horn should stick and sound off continuously. A second



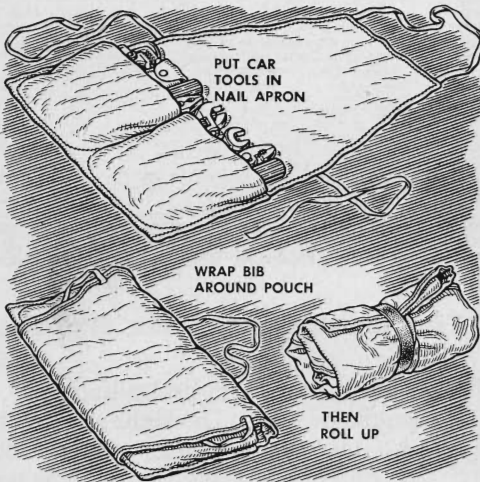
tip: Fasten the battery cable to its terminal on the starter solenoid or junction box with a wing nut, as above, in place of the regular hex nut. You can now disconnect the battery in seconds, without tools, to prevent a fire in case of a short.



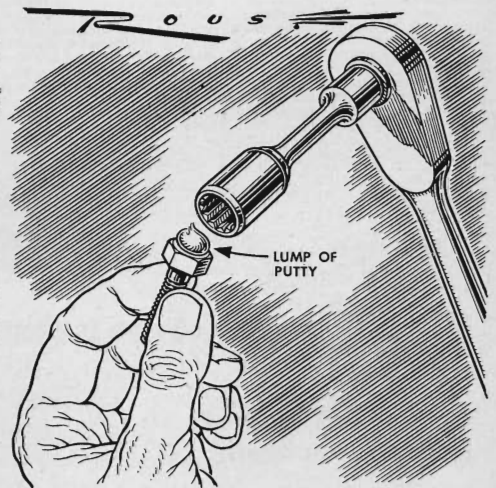
To avoid scoring valve seats when grinding-in valves, always install a lifter under the valve before beginning work. It is a constant reminder to ease up on the grinding pressure and lift the valve frequently to redistribute the compound.



Brake-shoe retracting springs can be installed with ordinary pliers fitted with a flathead nail. Hook the free end of the spring on the nail and stretch it across to the opposite shoe by squeezing the pliers against the brake lining.



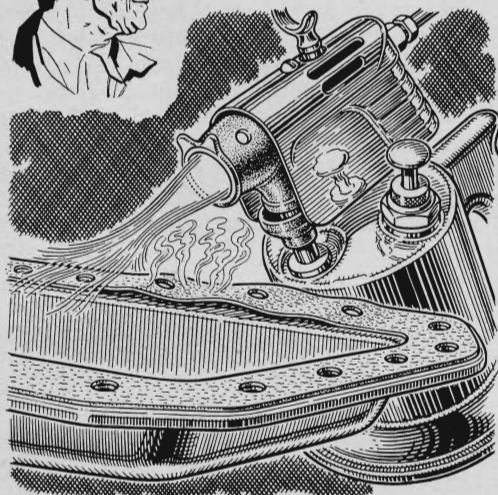
Silence the rattle of tools and keep them together by stowing them in the pockets of a carpenter's nail apron. If forced to make a roadside repair or change a tire, remove the tools and slip on the apron to protect your clothes.



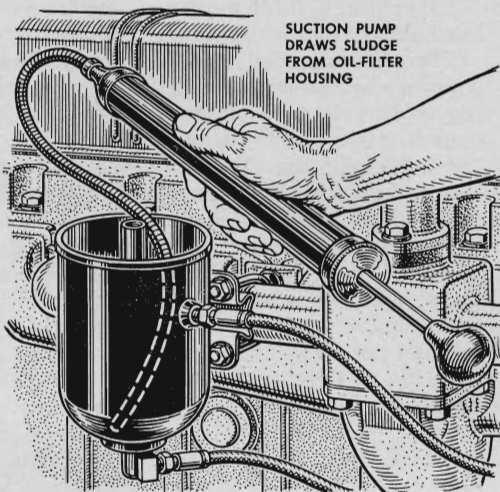
Stick bolts, nuts or cap screws in a socket wrench with a small lump of putty to hold them while you start them in hard-to-reach places. Leave the sticky stuff in the socket for the next hard job; it won't interfere with normal use.



Hints from the Model Garage

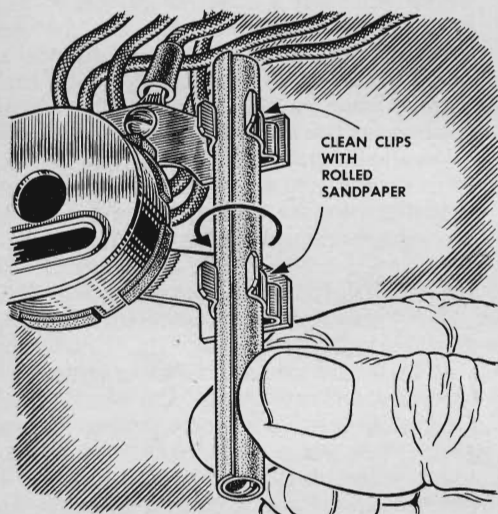


Remove a stuck-on oil-pan gasket without tedious scraping by passing a blowtorch over it. Don't burn the gasket; just heat it until it loosens and peels off easily. Wipe the pan clean before applying the torch, so that the oil doesn't ignite as you play flame around the edge.



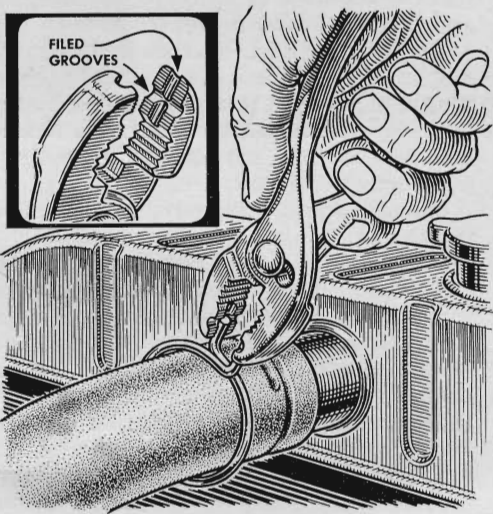
SUCTION PUMP
DRAWS SLUDGE
FROM OIL-FILTER
HOUSING

Changing an oil-filter cartridge? it's important to remove the sludge from the bottom of the filter housing. If there's no drain plug, this gook can be drawn out with an inexpensive suction gun used for draining and filling differentials. Then wipe the housing clean with a rag.



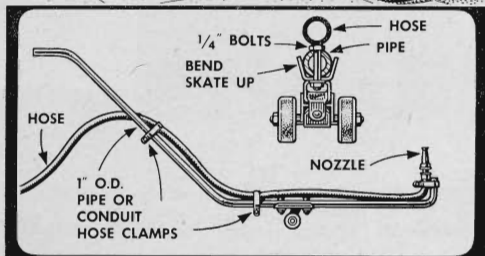
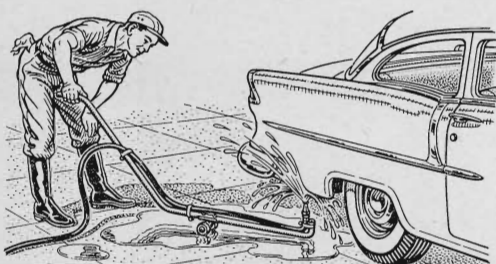
CLEAN CLIPS
WITH
ROLLED
SANDPAPER

Electrical accessories will give peak performance if the inside surfaces of fuse clips and the fuse ends are clean; corrosion adds resistance to low-voltage circuits. Sand them lightly and bend the clips together slightly for tighter contact.

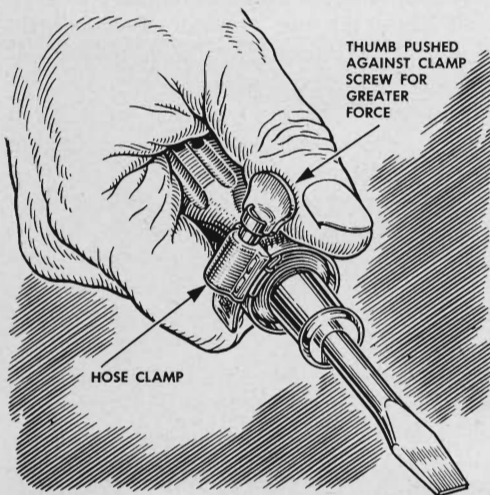


FILED
GROOVES

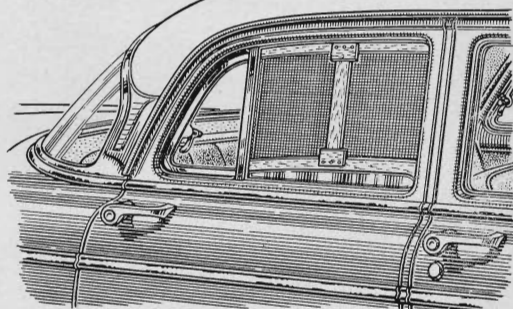
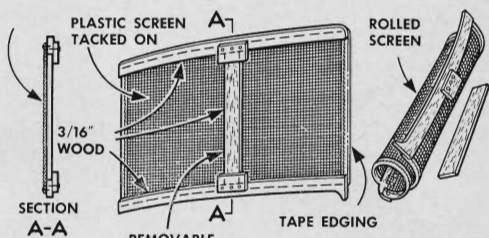
Spring-type hose clamps can be removed easily if grooves are filed in the jaws of a pair of pliers to keep the spring tabs from slipping. File a set of grooves parallel with the jaws and another set across the jaws for use in all positions.



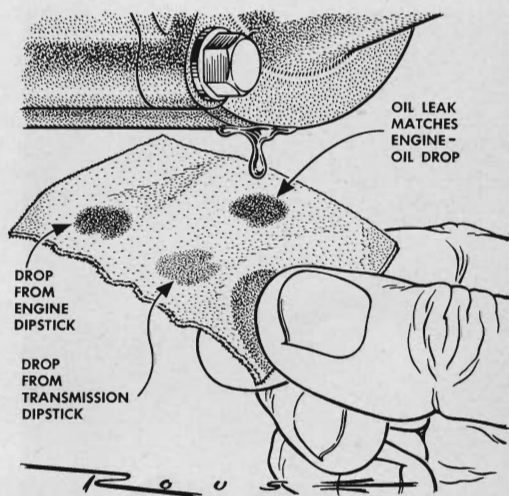
Flush dirt from the underside of a car without getting yourself wet by clamping the hose to a dolly made from a 6' length of pipe and half a roller skate. Bolt the skate to the pipe and bend up a handle. To avoid a geyser, turn on the water *after* pushing the dolly under the car.



Get a better grip on the handle of a screwdriver by tightening a worm-gear hose clamp around the handle near the shank of the blade. Grasp the tool so that your thumb bears against the clamp screw in the direction you're turning.



These car screens roll up for compact storage when not in use, yet they can be installed in minutes. Tack plastic screen to an upper and lower spreader shaped to fit the contour of the window. Insert a strip of wood to stretch the screen and secure it by raising the window against it.

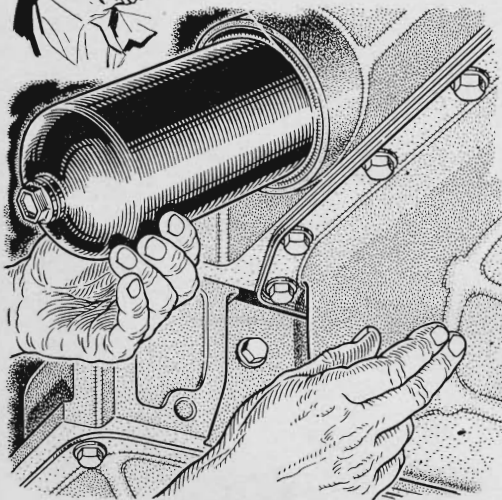


To locate an oil leak, pull the dipsticks from engine and automatic transmission and let a drop of oil from each fall on a white blotter. Then hold the blotter under the car to catch a drop of leaking oil. Compare the colors.



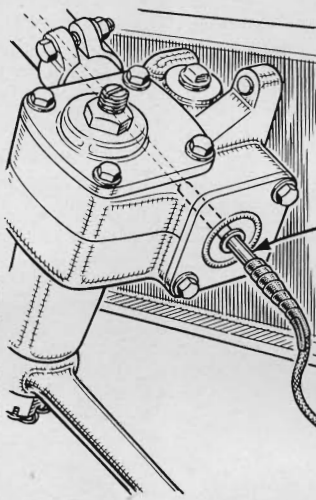
Hints from the Model Garage

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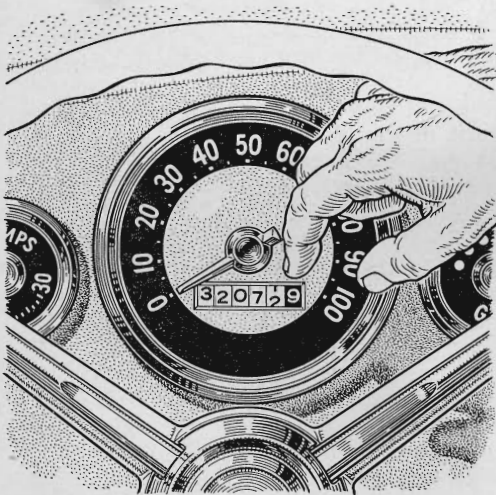
To check an oil filter quickly, feel the temperature of its housing after warming the engine. If the housing feels substantially cooler than the oil pan, the cartridge is dirty and oil is bypassing it. Change it as soon as possible.

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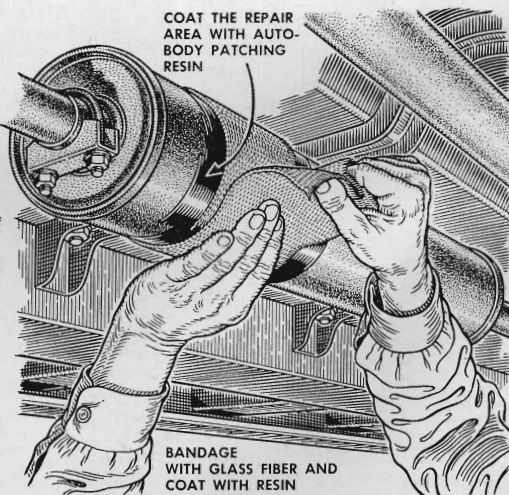


A horn wire that's frayed where it enters the steering column can cause the horn to blow when you turn the wheel. Slit a plastic soda straw and slip it over the wire to cover the frayed spot. To hold the straw, tape it to the wire.

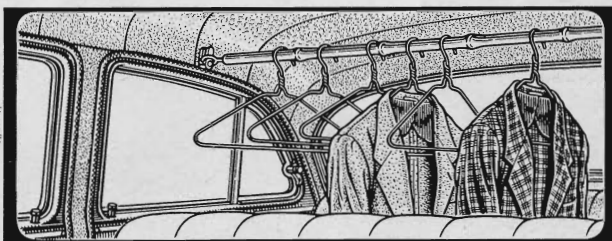
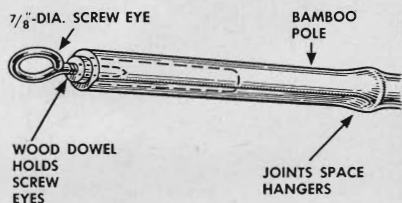
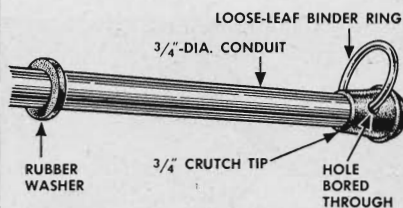
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Buying a used car? Look closely at the figures on the speedometer. If the first three digits are not in perfect alignment, you can suspect the mileage has been set back. Try to estimate the *true* mileage by the condition of the tires and pedals.

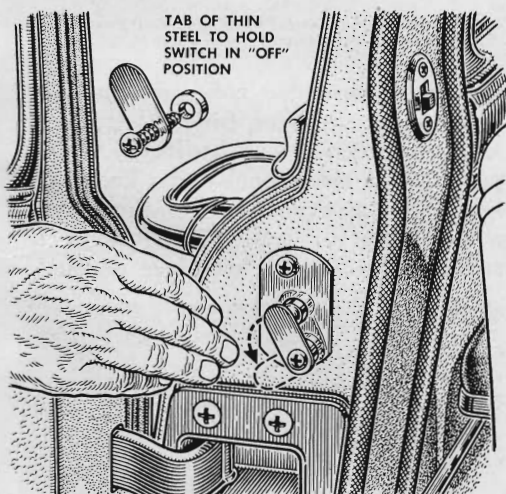


A permanent muffler repair can be made with a glass-fiber body-patching kit. Wire-brush the area around the damaged part and apply a coat of liquid resin. Then wrap a strip of glass-fiber cloth around it and saturate it with resin.



Garments stay wrinkle-free if you hang them on a bamboo pole or a length of conduit suspended between the rear-seat coat hooks. If bamboo is used, plug each end with a dowel and fit it with a screw eye. The knobby joints will keep hangers

from sliding. On a rack made of conduit, protect the car by pressing crutch tips over the ends. Hang the rack on loose-leaf rings snapped into holes drilled through the ends. Slip hose washers on the conduit to space the hangers.



Sitting in a drive-in on a warm night, you can keep the car doors open without burning the dome and courtesy lights. Install metal tabs on the door switches and swing them over the switch buttons to hold them in the "off" position.

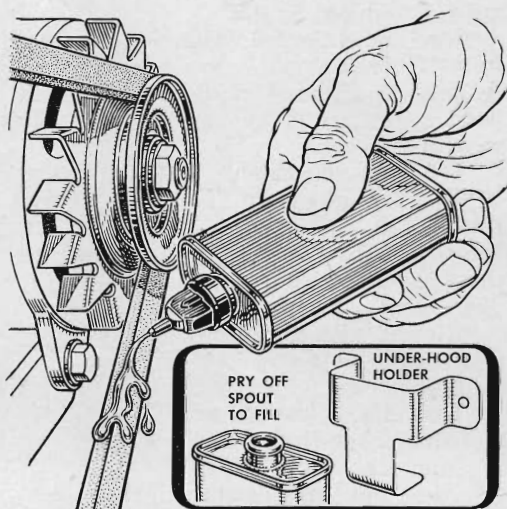


Tie a cork gasket in place with *light* sewing thread to keep it from slipping out of position during installation. The thread needn't be removed, as it won't interfere with the seal or the insertion of bolts. For neatness, trim off the free ends.

Hints from the Model Garage



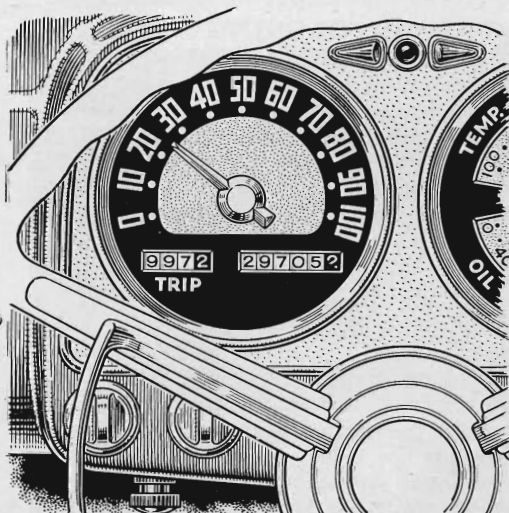
Drop a spare set of car keys in the windshield-washer reservoir bag. They won't interfere with its operation. The opaque bag makes a safe hiding place and the keys won't vibrate loose as they might if taped to some part of the car.



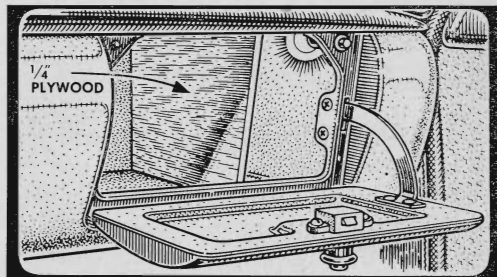
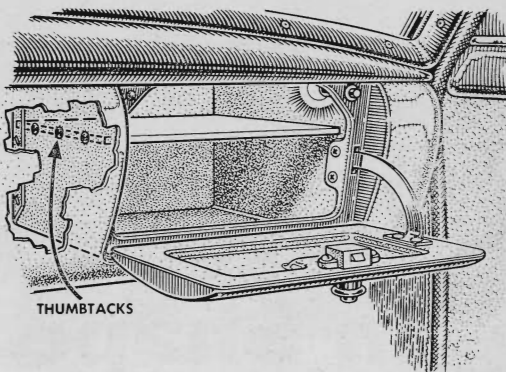
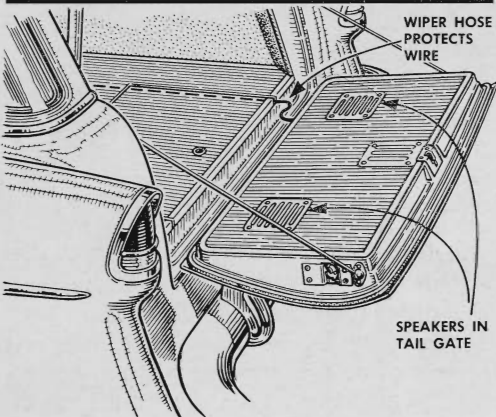
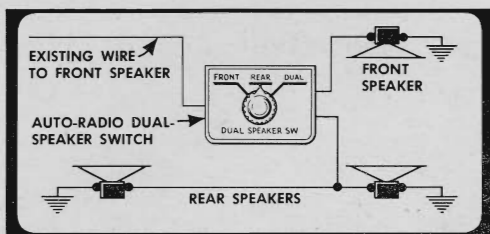
To silence fan-belt squeaks and the like, keep some brake fluid in a lighter-fuel can. It'll also lube tires for easy mounting; and give a fast cleaner for floor mats and soiled hands. A spring clip mounted under the hood will carry it.



Freshen the faded interior of an older car by spraying it with fabric dye dissolved in hot water. Use a deeper shade of the original color and saturate the material. Masking isn't necessary as the dye can be wiped off metal, glass and paint.

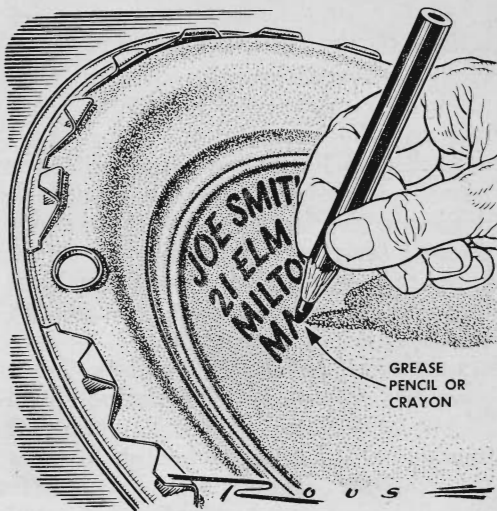
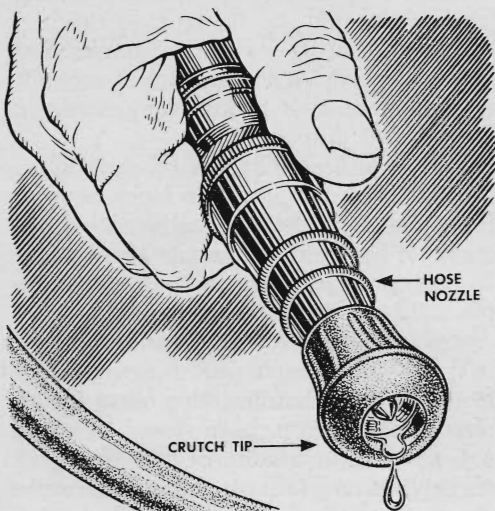


You can keep tab on oil changes if your car has a trip odometer. Set it to zero when the car is serviced. Unlike a garage sticker, which you must remember to check, the odometer will be a reminder as mileage nears oil-change time.



A station wagon's tailgate is a safe place to mount rear-seat speakers. Set speakers in holes cut in the tailgate and cover them with metal grilles. Connect them to the front-speaker wire with a three-way dual-speaker control switch.

A plywood shelf or vertical partition installed in the glove compartment keeps road maps neat and separate from other articles. Fasten the wood dividers with thumbtacks driven through the fiber sides or bottom of the compartment.



A hose nozzle can't scratch or chip your car's finish if you cover its end with a rubber crutch tip. Cut a $\frac{1}{8}$ " hole in the crutch tip to let the water through. Center this hole so that it won't interfere with the fine-spray adjustment.

Print your name, address and phone number with a grease pencil on the inside of your car's hub caps. If you should happen to lose one, there is a good chance it will be returned or that you will receive a call to come and get it.



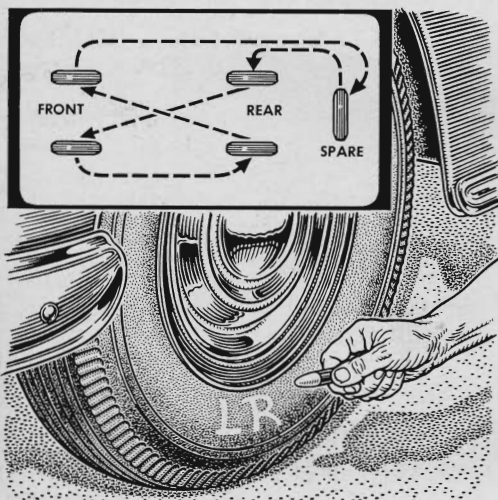
Hints from the Model Garage



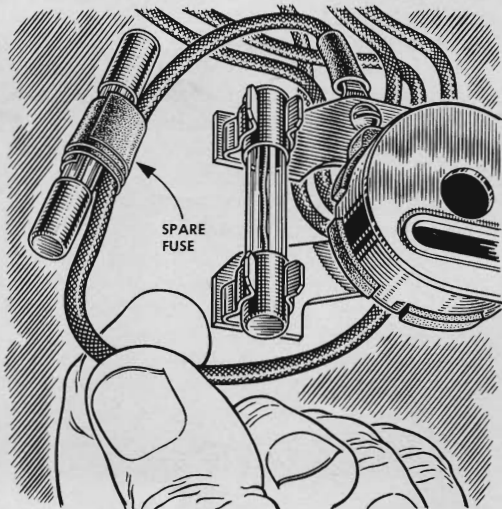
Hold a mirror over the cell openings of your car battery to see if the electrolyte levels are high enough. With vent plugs off, the liquid inside shows up clearly, saving you, with some models, an uncomfortable stretch under the hood.



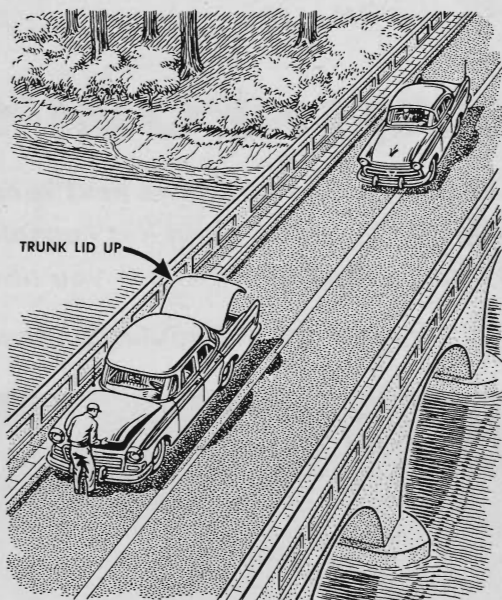
Glass polish wiped liberally on the inside of your car or station-wagon windows transforms the vehicle into a private dressing room at the beach. The translucent coating is quickly rubbed off later, leaving the windows clear and sparkling.



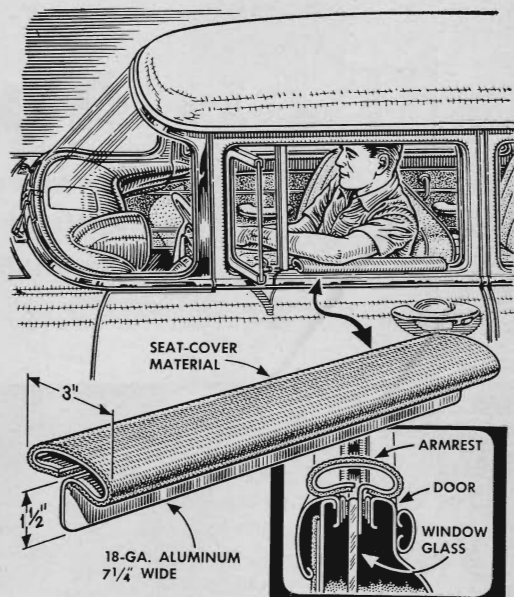
Switching tires can be simplified if you first mark their positions with a crayon (LR for left rear, for example). Then you can check later to see if they've been rotated properly (see sketch). Crayon won't come off during handling.



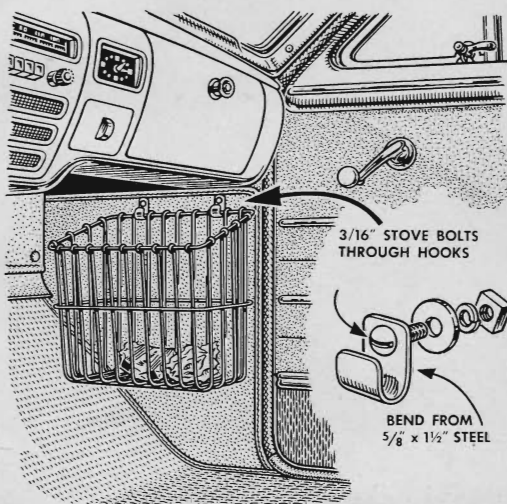
Tape a spare fuse on one of the wires leading to each fuse clip and it will always be handy when needed. But make sure the amperage of your spare matches that of the fuse to be replaced; amperage varies from place to place on a car.



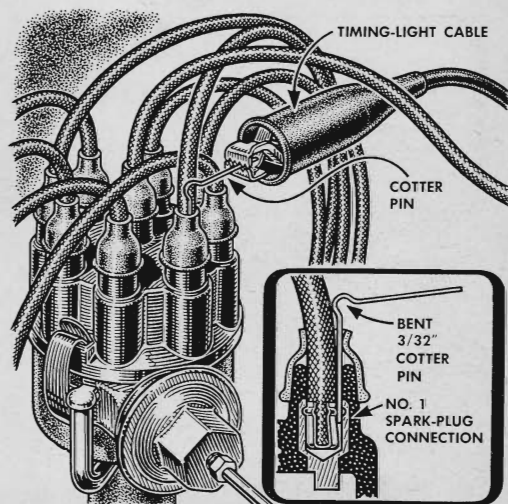
Raised trunk lid serves as a good daytime warning that your car is stopped for repairs. Visible a long way off, it gives other drivers time to stop or go around when you are caught on a section of road where it's impossible to pull off.



An armrest that fits over the window sill lets the driver rest his arm during long trips without burning it on hot car metal. Woven seat-cover material is cemented to a piece of aluminum shaped to slip between door and window glass.



A litter container stores family trash until it can be emptied at a service station or at home—instead of on the highway. A bicycle basket hangs from hooks bolted to a panel under the dash and is easily removed and replaced.



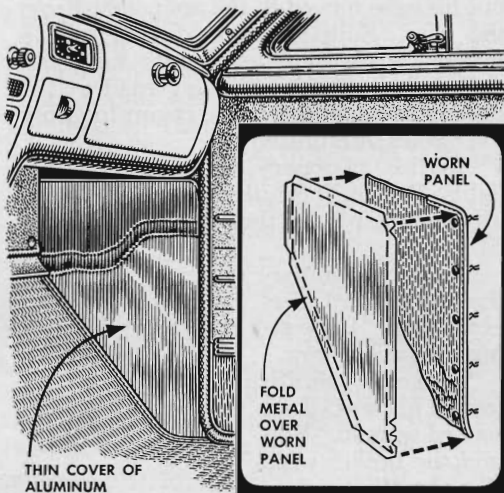
Hook up a timing light quickly with a bent cotter pin. One leg of the pin slips into the distributor cap's No. 1 spark-plug socket; the timing-light cable clamps on the other. The distributor is often easier to reach than the plug.



Hints from the Model Garage

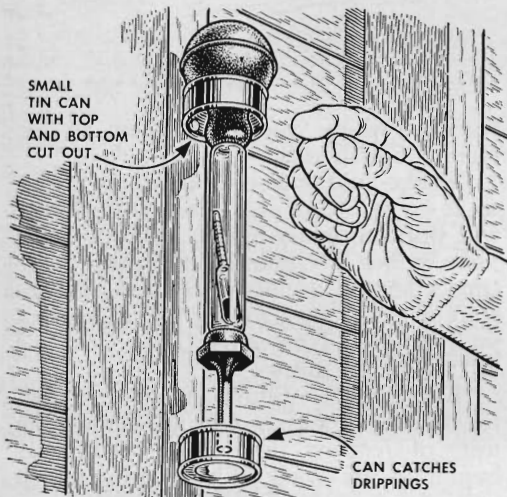


Feed drops of paint neatly to a touch-up brush by taping an eyedropper to its ferrule. Place the tip of the dropper a little below the ferrule so that paint will flow onto the top of the bristles and work its way evenly to the tip.



THIN COVER OF ALUMINUM

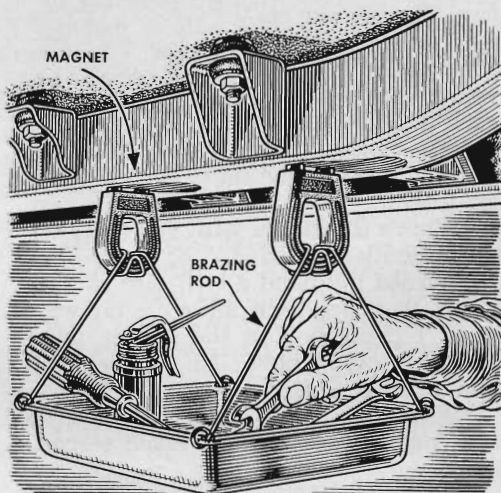
Cover worn interior panels—especially those under the dash—with pieces of embossed sheet aluminum. Simply pry off the old panel and cut the aluminum to fit it, allowing enough extra on all sides to bend over the old panel.



SMALL TIN CAN WITH TOP AND BOTTOM CUT OUT

CAN CATCHES DRIPPINGS

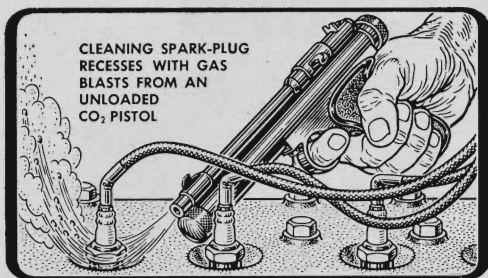
Store a hydrometer safely in a drip-catching hanger made from two small tin cans nailed to a stud. The upper can has its bottom cut out, forming a holding ring. The lower can is used with its bottom intact to catch drippings.



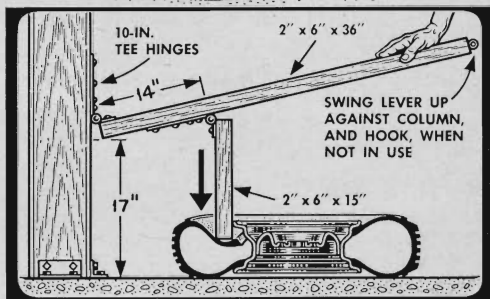
MAGNET

BRAZING ROD

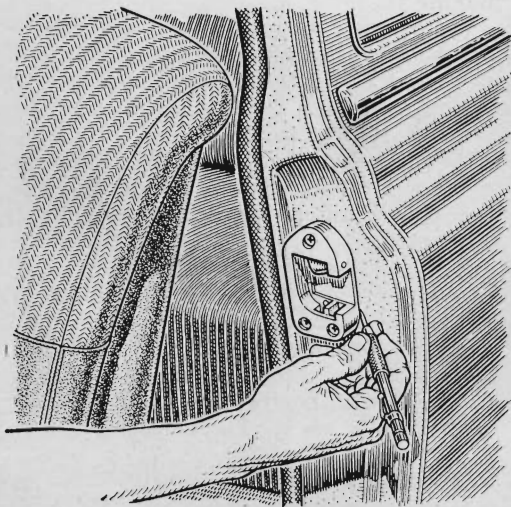
Keep tools and small parts handy in a tray supported by two husky magnets. They'll stick almost anywhere under the car and can be quickly removed and shifted elsewhere. Fasten the magnets to the tray at each end with brazing rod.



Blast dirt away with carbon dioxide from a CO₂ pistol, in place of compressed air, when working on your car. The gun can be triggered without a pellet in it to release more than 70 short blasts of gas at high velocity from one cylinder.



Separate tire beads from wheel rims by applying the principles of physics instead of brawn. The hinged lever and pressure block shown in the sketches above will safely and easily break any bead free—even from the grooved safety-type rims.



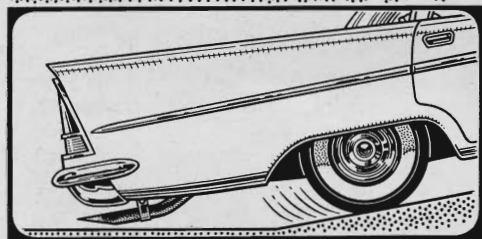
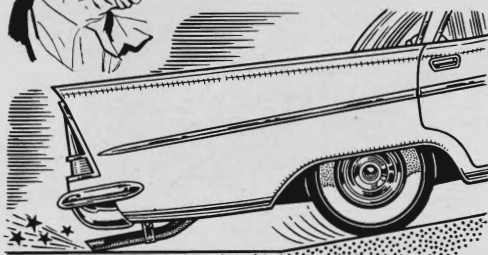
Outline the position of striker plates when doors are working easily. Later, if screws loosen and a plate shifts, it can be returned to its original position. If the door shifts out of alignment, the marks will prove the plate's not at fault.



Seal your garage floor against pitting and flaking caused by salty slush brought in by your car. Combine equal parts of boiled linseed oil and turpentine and warm the mix in a pail of hot water. Brush on two coats eight hours apart.



Hints from the Model Garage



A tailpipe that scrapes as you enter or leave a steep driveway can be cut without shortening it. Hacksaw a piece from the bottom of the pipe at a long angle. You gain road clearance, yet the overhang keeps the bumper free of exhaust stains.

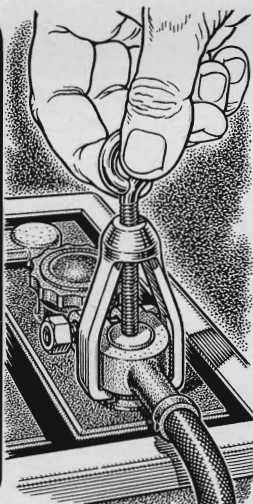
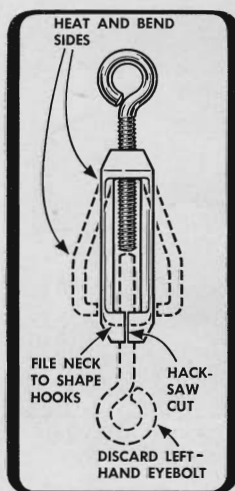


CUT
END
MAKES
A BRUSH

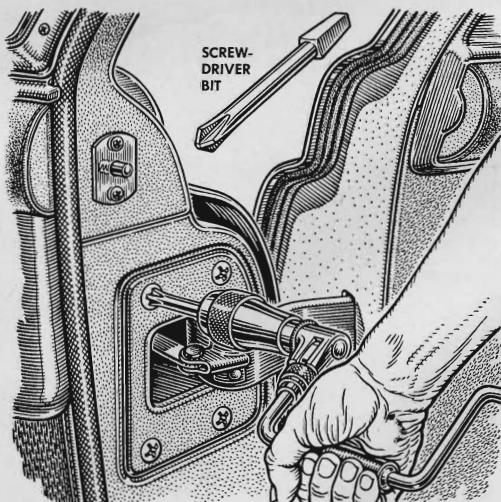


BRAKE-CABLE END

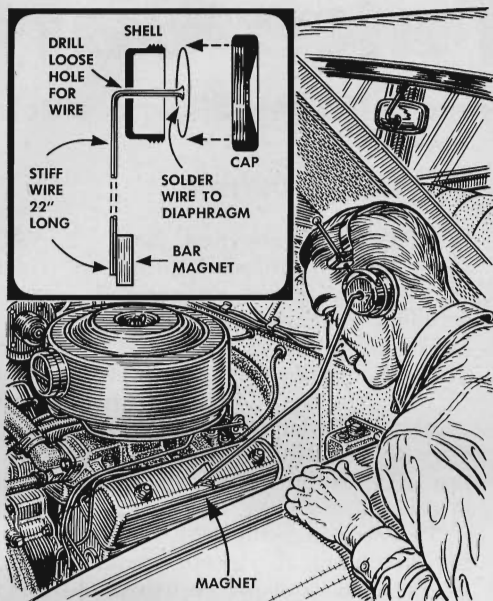
Corrosion can be cleaned from inside distributor-cap terminals with a wire brush made from a discarded hand-brake cable. Cut the cable near its end and use its adjusting rod as a handle. Unravel a few strands, insert in the terminals, and twist.



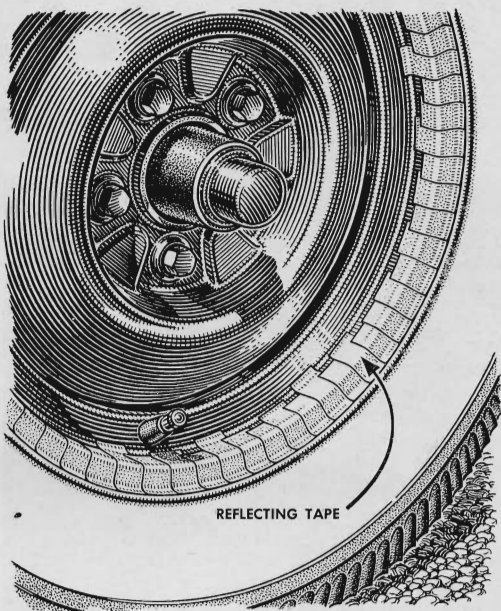
A safe battery-terminal puller can be made from a turnbuckle. Discard the left-hand eyebolt and hacksaw the threaded end down the middle. Spread the sides and file off enough from the split end to make hooks that fit under the cable clamps.



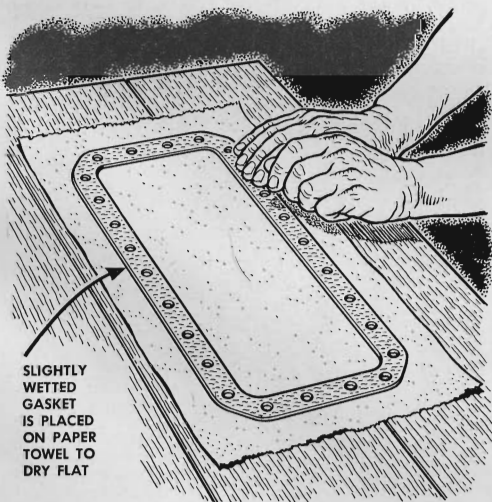
For that extra leverage needed to loosen the adjusting screws on door hinges without damaging their heads, try a carpenter's brace. Screwdriver bits with shanks to fit the brace can be purchased for both Phillips-head and slotted screws.



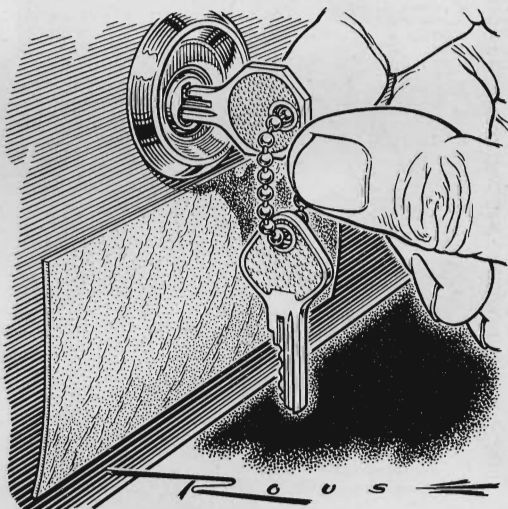
To pinpoint engine noises, use a stethoscope made from a radio earphone. Solder a stiff wire to the diaphragm, and the earphone's magnet to the wire's other end. Touch the magnet to different parts of the engine to listen and trace noises.



Short strips of reflecting tape placed side by side around wheel rims serve two purposes: They reflect an oncoming car's headlights when you drive out of a side street and they eliminate any occasional tendency for the wheel covers to creak.



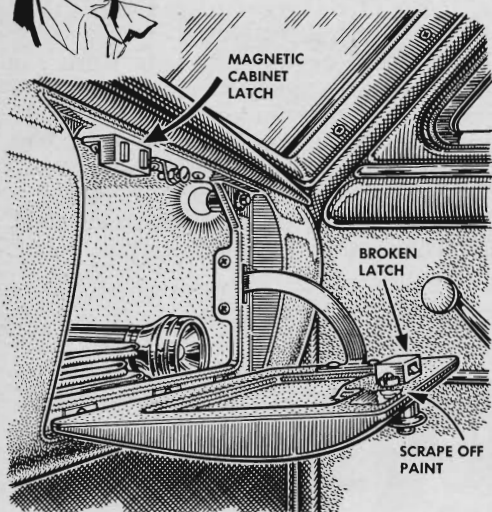
A cork gasket that has shrunk can sometimes be restored to its original size by dipping in water and laying it flat long enough to absorb the moisture and swell. Don't soak it for a long period of time, as it might come apart or crumble.



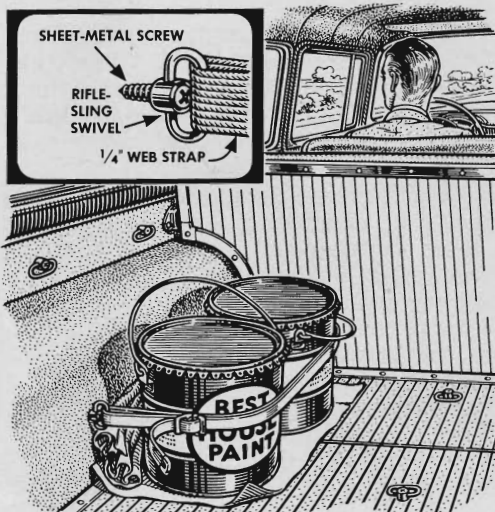
The noise of keys jangling against the dash can be silenced by cementing a small square of leather to the metal below the ignition switch. Rubber cement will hold it without damaging the finish. Colored leather can be bought at craft shops.



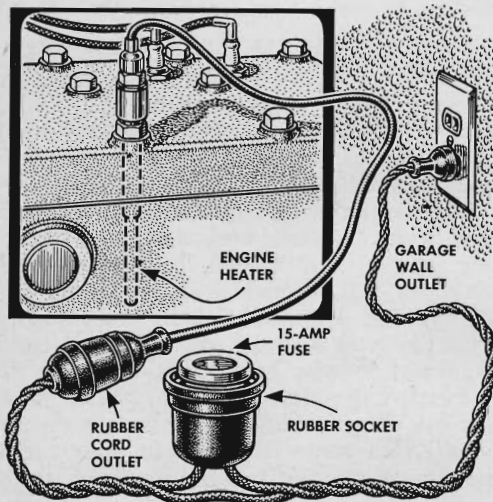
Hints from the Model Garage



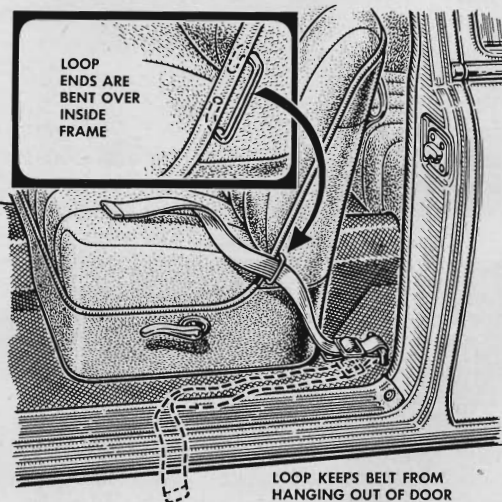
A magnetic cabinet latch can be used to replace a broken glove-compartment lock. Screw the latch to the door frame and scrape paint off the inside of the door where it touches the magnet. The new latch may eliminate some rattles, too.



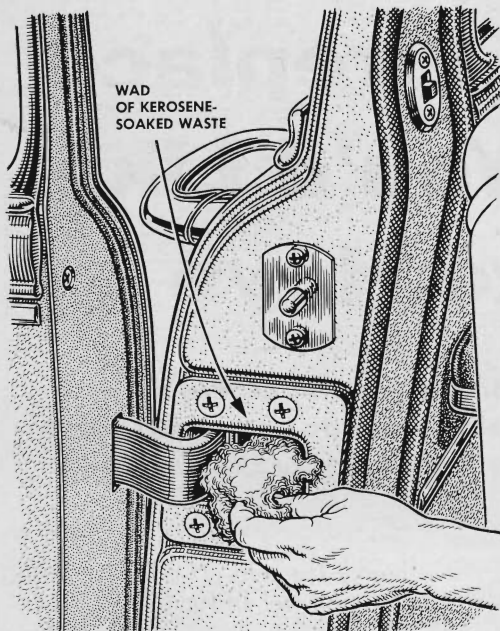
Cargo can be secured in a station wagon by fastening several sets of rifle-sling swivels to the sides and floor of the vehicle with sheet-metal screws. Used with several random lengths of web strap, almost anything can be safely tied down.



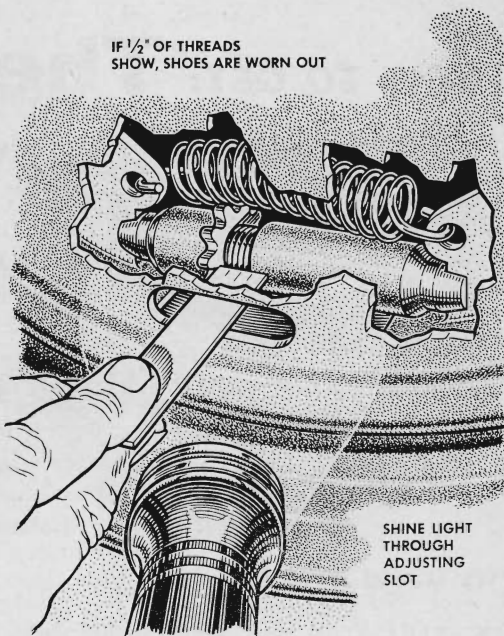
Protect an engine heater by plugging it into a short, fused extension line. Use No. 12 or 14 wire with a plug at one end and a rubber outlet at the other. Cut one leg of the cord and install a rubber socket to hold a 15-amp house fuse.



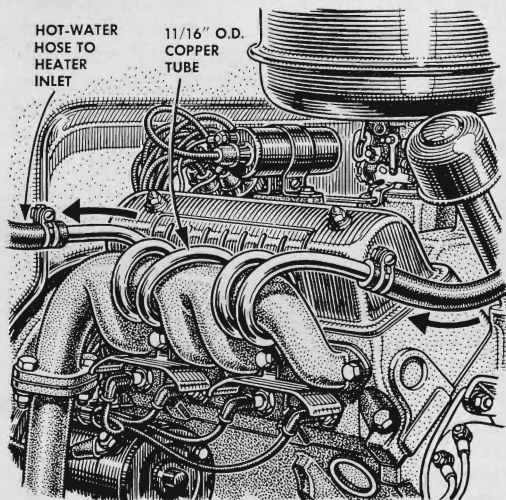
Opened seat belts can be kept from dangling out the door by threading the two outer belts through loops bent from heavy copper wire. Insert the loops in holes punched in the seat frame with an ice pick and bend the ends over.



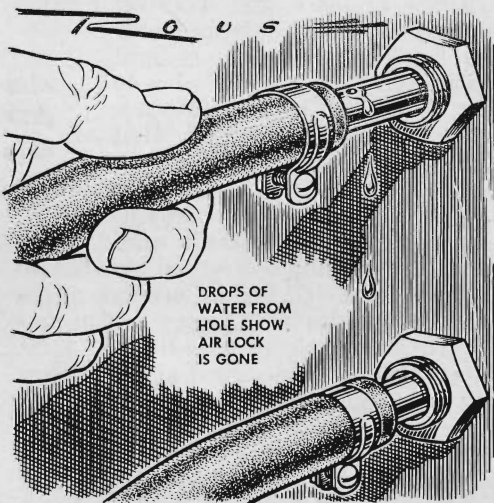
Rusted, squeaky door hinges can be freed and silenced by stuffing a wad of cotton waste in each hinge pocket. Saturate the wad with kerosene or penetrating oil and leave it in place for a few days, or until the hinge responds to the treatment.



Check brake-lining condition quickly on cars with Bendix-type brakes by inserting a $\frac{1}{2}$ "-wide strip of cardboard in the adjusting slot. If $\frac{1}{2}$ " or more of the adjusting threads is exposed, the lining is worn down near the rivets.



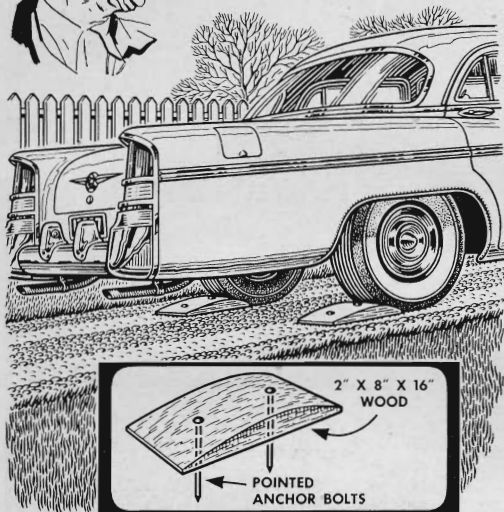
You can get more heat from your car heater by using wasted heat from the exhaust manifold. Wrap a length of copper tubing around the manifold, then cut the inlet hose running to the heater and connect the cut ends to the tubing.



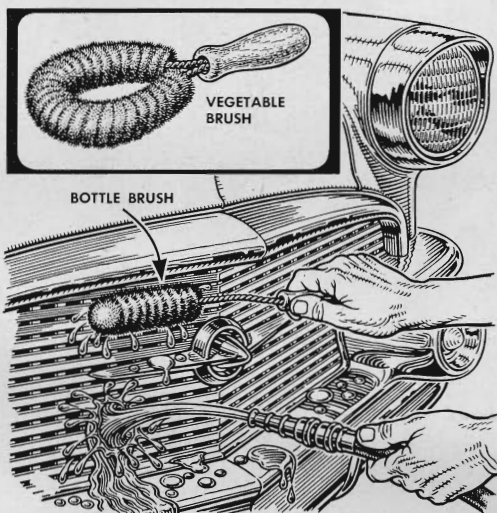
To bleed trapped air out of an air-bound car heater, pull back the top hose and drill a $\frac{1}{8}$ " hole in the fitting. Allow the air to escape until the coolant starts flowing out of the hole. Then push the hose over the hole and tighten the hose clamp.



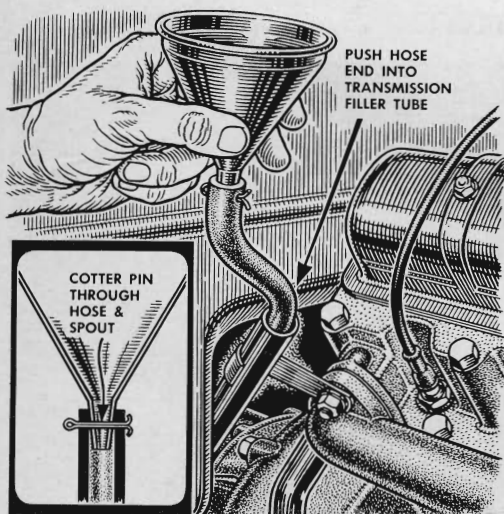
Hints from the Model Garage



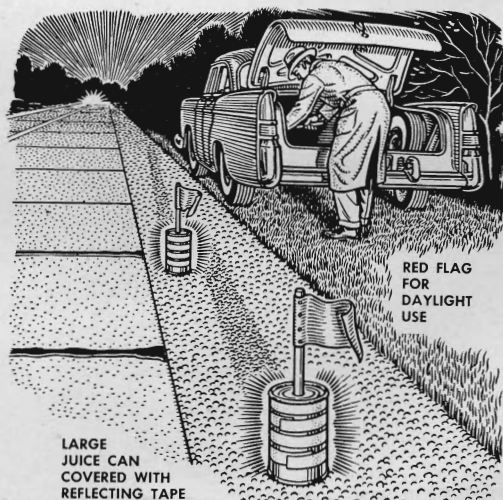
A pair of rounded wood blocks anchored to a sloping driveway will keep a car from rolling away. The blocks should be gently rounded so they are easy to run over, yet at the same time just steep enough to hold the car when it is parked.



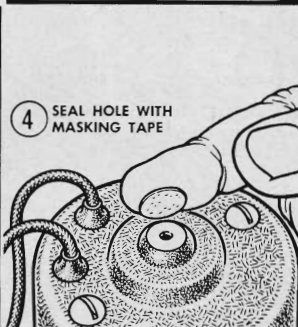
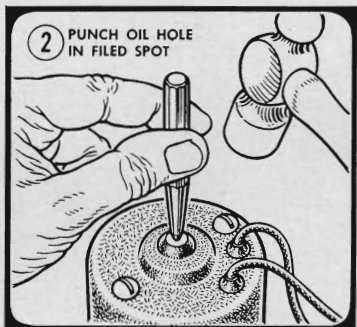
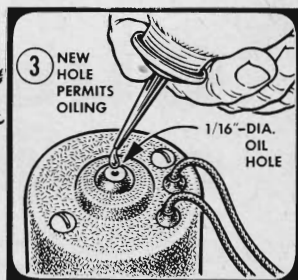
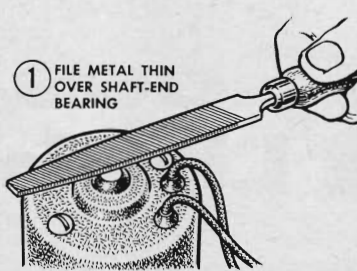
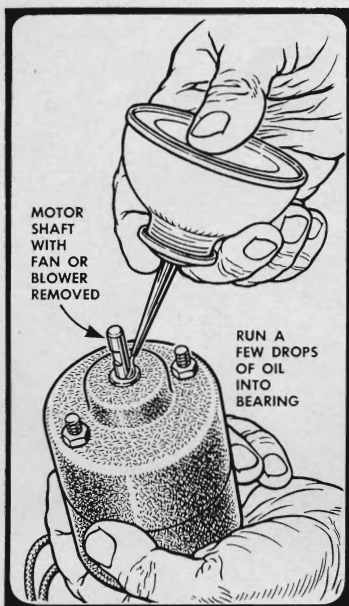
Need a handy tool for cleaning the elaborate grille on a modern car? Find a vegetable or bottle brush in the kitchen, and you can reach in and clean *all* the chrome, where a cloth or a sponge would get at and clean only the surface.



A hose attached to a funnel will help get automatic-transmission fluid to a filler tube that is close to the car's fire-wall. Use hose that will fit *in* the filler tube and slip it over the funnel's neck. A cotter pin will hold the hose in place.

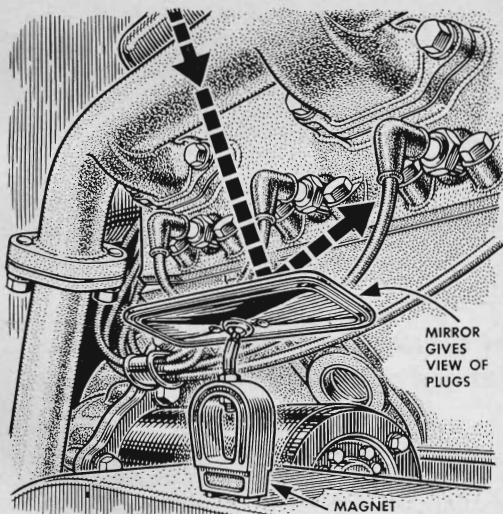


A few tin cans of different diameters make an effective highway warning. Nested, they take little space in the trunk. Wrap with reflecting tape for night, and stow small red flags in the smallest for daylight emergencies.

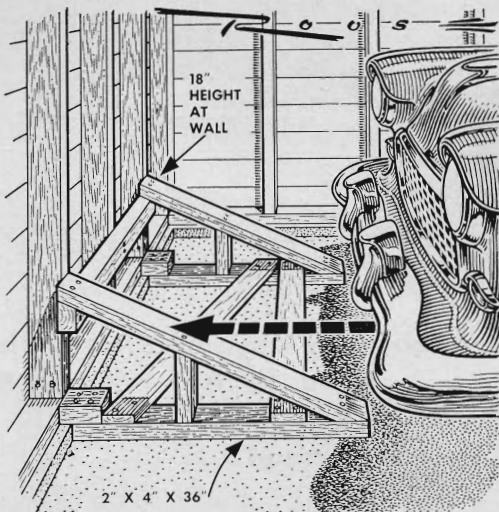


Small heater and electric-wiper motors are often neglected because they must be taken apart to be oiled. A drop in efficiency results. Simplify the problem by providing an oil hole in the sealed housing-end. File the metal thin but not

through, then punch a small hole directly over the shaft. Light oil can be fed to the rear bearing through this hole, and the hole sealed against dust with a disk of masking tape. Oil can be trickled down the shaft to the front bearing.



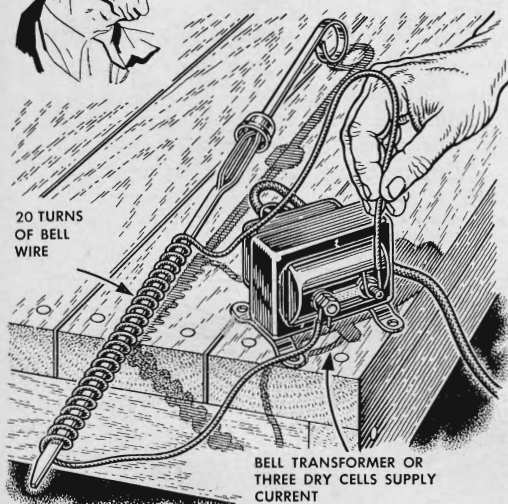
To help you see beneath the manifolds when installing plugs in new V-8s, fasten an old rear-view mirror to a husky magnet. Place it on the frame with the mirror aimed at the plug openings and you can work without feeling your way.



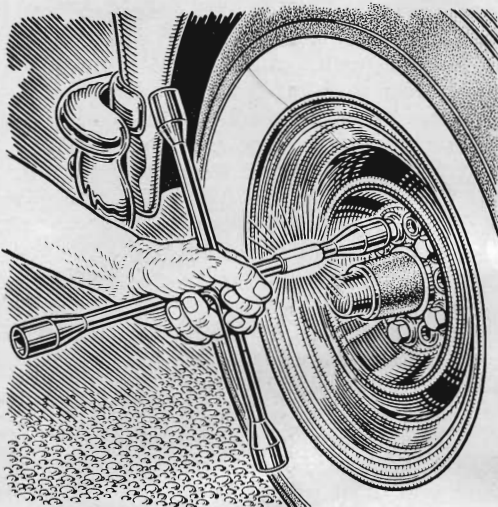
A tapered car-stop of two-by-fours built against the garage wall serves a double purpose: It prevents accidentally ramming the wall; and as the bumper rides up on it, the car's weight is off the front springs, postponing front-end sag.



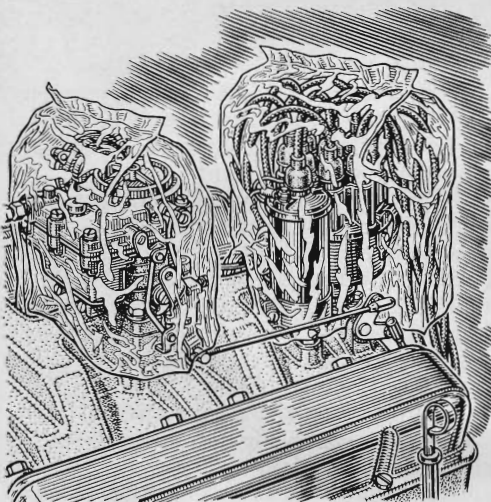
Hints from the Model Garage



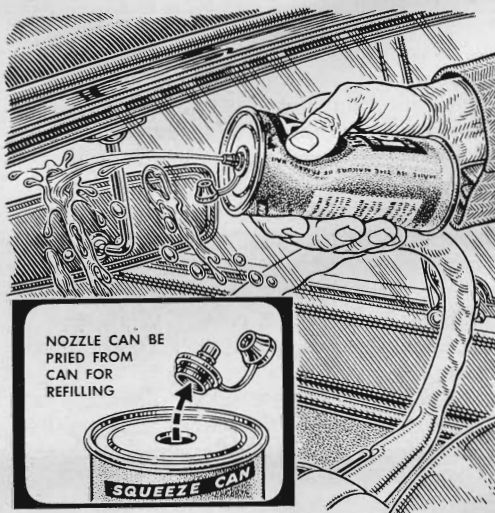
A magnetized dipstick will collect tiny iron and steel particles in a crankcase. Magnetize it with a quick pulse of current through a temporary coil. With AC you may need to repeat until you catch the current cycle at or near a peak.



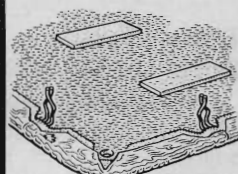
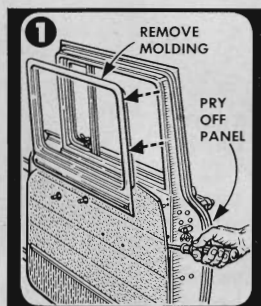
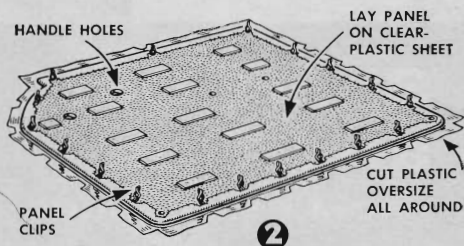
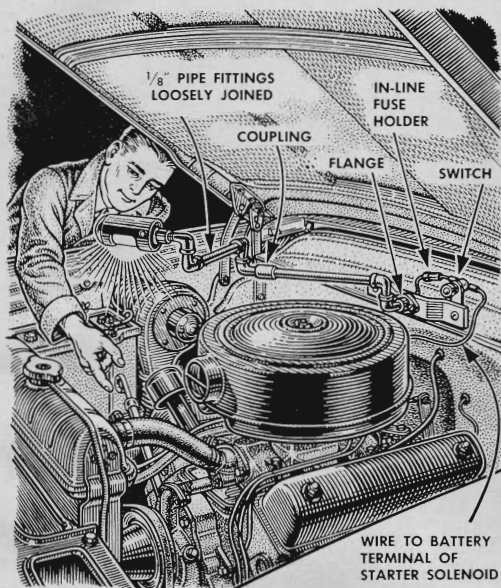
A strip of reflective tape wrapped around one shank of a four-way lug wrench saves fumbling for the right socket when changing a tire. Little disks of the tape stuck on the bolt heads may keep them from being lost if you get a flat at night.



When washing or degreasing an engine, cover the carburetor, coil and distributor with plastic food-saver bags to keep them dry. After the washing, remove the covers and the engine should start easily, or at most after drying only the spark plugs.

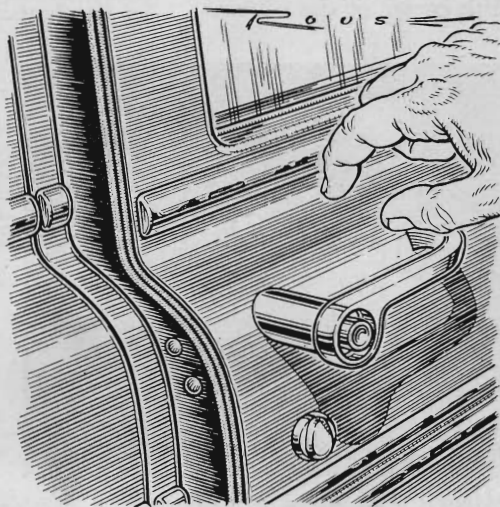
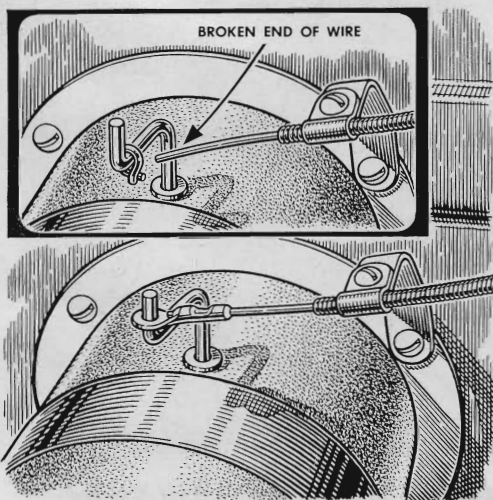


To clear your windshield quickly of slush and muddy road spray raised by the cars ahead of you, squirt some water on the glass while operating the wipers. Store the water in one of the new squeeze cans used for liquid detergent.



An under-hood lamp on swiveling pipe fittings puts light where you need it. Connect several feet of wire to a license-plate or map light and thread it through the fittings before loosely screwing them together. Bolt the unit to the fire wall.

Keep the new look in your car's interior by covering the cowl and door panels with sheets of clear plastic. Pry off the panels and cut the plastic to fit with an inch overlapping all around. Fold the edges over and secure them with tape.



A terminal lug makes a neat repair where the eye of a flexible control cable has broken off. Select a lug with a hole the diameter of the eye it will replace. Tin the end of the control wire or cable, slip on the lug and solder it in place.

Opening the doors slightly when you put your car in the garage after being out in the rain can add years to the life of the car's body. This hastens drying at critical areas such as door bottoms, which are usually the first to rust.